TRANSMITTAL OF APPEAL BRIEF (Large Entity)	Docket No. ITL.0630US

In Re Application Of: **Thomas E. Willis et al.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/081,751	February 22, 2002	Henry N. Tran	21906	2674	9398

Invention: **Digitally Driving Pixels From Pulse Width Modulated Waveforms**

COMMISSIONER FOR PATENTS:

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Dated: **July 14, 2005**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before Applicant:	Thomas E. Willis et al.	Art Unit:	2674
Serial No.:	10/081,751	Examiner:	Henry N. Tran
Filed:	February 22, 2002	Docket:	ITL.0630US P12054
For:	Digitally Driving Pixels From Pulse Width Modulated Waveforms	Assignee:	Intel Corporation

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APPEAL BRIEF

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REAL PARTY IN INTEREST

The real party in interest is the assignee Intel Corporation.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF CLAIMS

Claims 1-30 (Rejected).

Claims 5, 6, 19, 20, and 29 (Objected to).

Claims 1-30 are rejected and are the subject of this Appeal Brief.

STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

In the following discussion, the independent claims are read on one of many possible embodiments without limiting the claims:

1. A method, comprising:

providing digital information (Fig. 5, 180) including global digital information indicative of a common reference and local digital information (Fig. 5, 186) indicative of an optical output from at least one display element (Specification at page 4, lines 10-18); and

determining a transition (Fig. 5, 188) separating a first pulse interval and a second pulse interval in a modulated signal based on the digital information (Specification at page 4, lines 10-18).

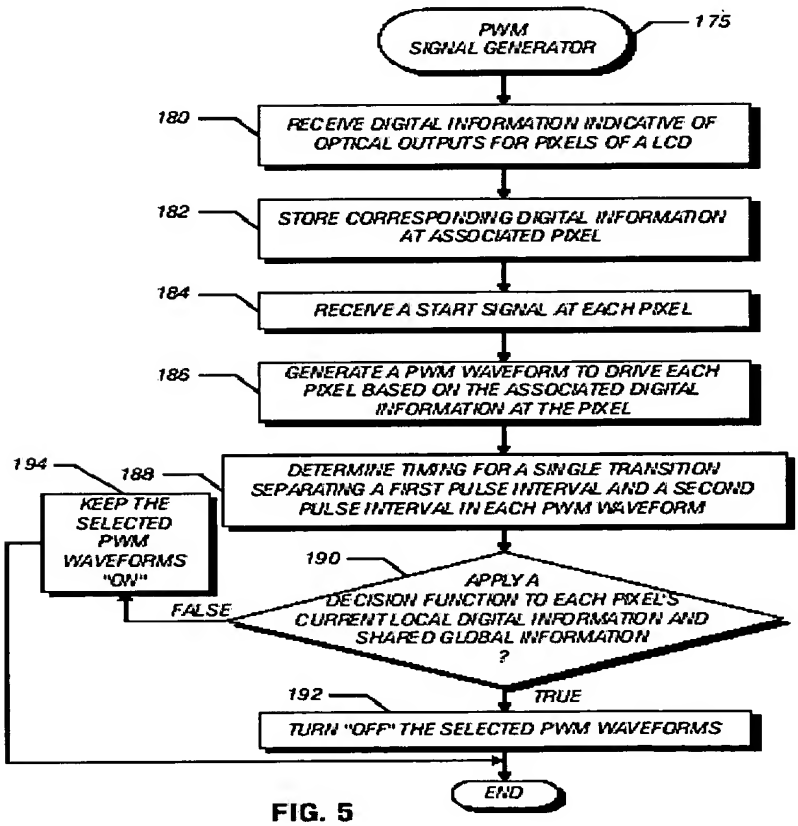

FIG. 5

11. An apparatus, comprising:

at least one display element (96, Fig. 2);

a controller (55, Fig. 2) to provide digital information including global digital information indicative of a common reference and local digital information indicative of an optical output from the at least one display element (96) (Specification at page 8, lines 21-25); and

a signal generator (70, Fig. 2) associated with the at least one display element (96) operably coupled to said controller (55) to receive the digital information and to determine a transition separating a first pulse interval and a second pulse interval in a modulated signal based on the digital information (Specification at page 9, lines 1-10).

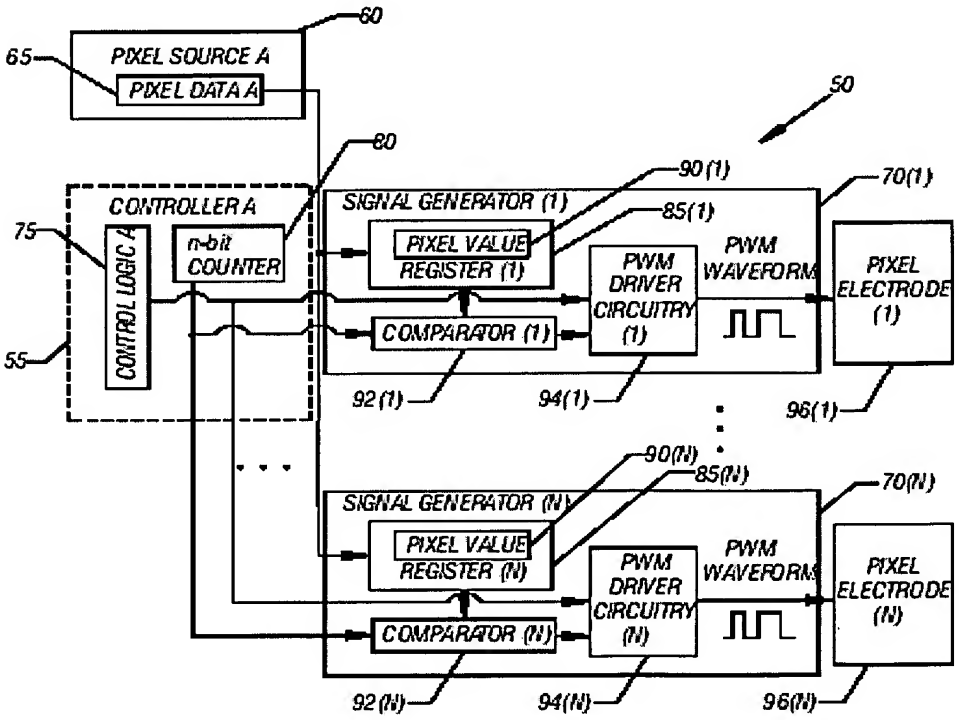

FIG. 2

21. A processor-based system, comprising:

a pixel array (20, Fig. 1) including a first and second pixel;

at least two first circuits (30, Fig. 1), each associated with a different pixel of said pixel array (Specification at page 5, lines 7-20); and

a second circuit (24, Fig. 1) to supply digital information including global digital information indicative of a common reference and local digital information indicative of a pixel output to each first circuit (30) to determine a transition separating a first pulse interval and a second pulse interval in a modulated signal based on the digital information (Specification at page 5, line 21 to page 6, line 2 and page 7, lines 16-26).

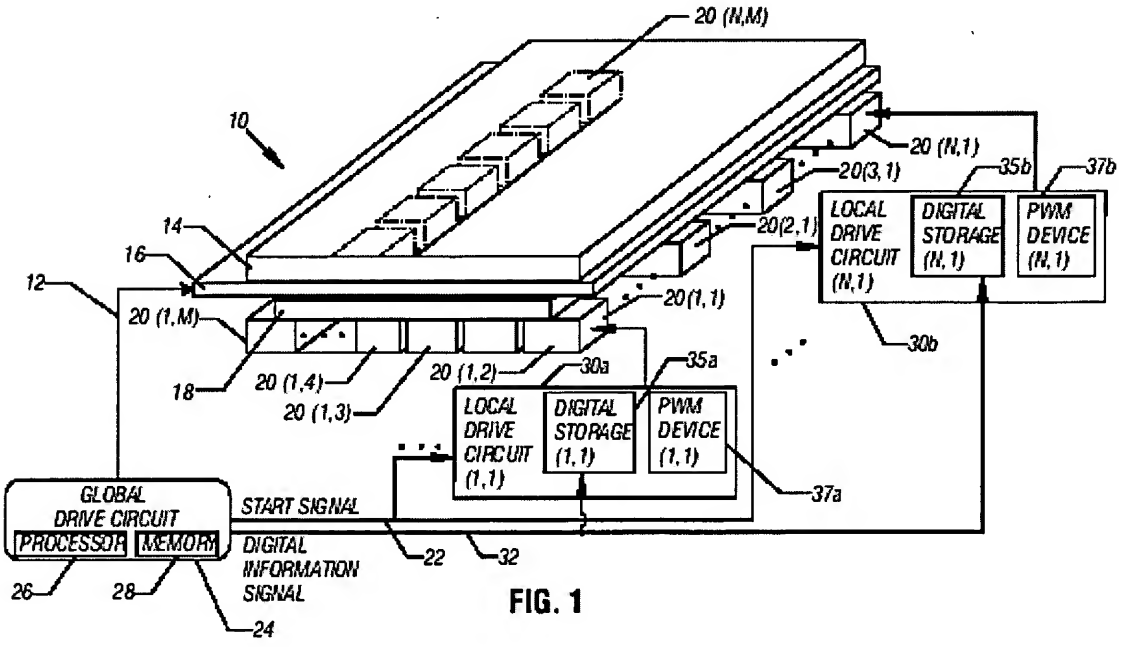

FIG. 1

At this point, no issue has been raised that would suggest that the words in the claims have any meaning other than their ordinary meanings. Nothing in this section should be taken as an indication that any claim term has a meaning other than its ordinary meaning.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Are Claims 1-30 Unpatentable Over Walker in View of Worley?

ARGUMENT

A. Are Claims 1-30 Unpatentable Over Walker in View of Worley?

Claim 1 *inter alia* calls for providing digital information including global digital information indicative of a common reference and local digital information indicative of an optical output from at least one display element.

The final office action suggests that the waveform generator 67 provides a common reference waveform. However, the claim is much more specific in that it calls for providing digital information, that digital information including global digital information indicative of a common reference. But the waveform generator 67 is a sawtooth waveform generator. How this can be considered digital information is not understood. Moreover, how it can be considered global digital information in the sense that global refers to all of the pixels is not understood.

Further, the claim calls for providing local digital information indicative of an optical output from at least one display element. The office action suggests that this is the element 70 which is the video controller. Why the video controller is believed to provide local information is not understood. The video controller is outside the box 69a which is provided per pixel. Thus, there is no way that a single video controller can be considered to provide local information any more than the waveform generator 67 provides global information. The circuits shown in Figure 7 of Walker have nothing to do with the claimed invention. They are not digital circuits and do not provide global or local information.

Further, claim 1 calls for determining a transition separating a first pulse interval and a second pulse interval in a modulated signal based on said digital information. There is no digital information in Walker. Therefore, there is no determining of any transition separating a first pulse interval and a second pulse interval based on the digital information.

Walker has no bearing whatsoever on the claimed invention. Its combination with Worley would simply leave one skilled in the art scratching his or her head. Even if it were true that Worley did teach driving a display element from a modulated signal to provide the output signal, it cannot possibly do so based on digital information.

In other words, there is no way to combine Worley and Walker to meet the claimed invention. Neither teaches the claimed digital information and neither teaches determining a

transition separating a first pulse interval and a second pulse interval in a modulated signal based on the digital information.

The first office action indicates that Worley teaches a digital storage element for generating pulse width modulated signals representing on and off states. However, this does not teach providing the claimed digital information and it most certainly does not teach determining a transition separating a first pulse interval and a second pulse interval in a modulated signal based on the digital information. There is no showing whatsoever in either office action of determining a transition separating a first and second pulse interval, much less determining such a transition based on digital information.

It is respectfully submitted that neither Worley nor Walker have anything to do with the claimed invention and their combination, to the extent it would be alleged to meet the claimed invention, makes no sense. The office action previous to the final rejection indicated that it would be obvious to combine the two references to utilize digital storage for storing the digital data and selective delay using forced on and forced off signals. But this is not what is claimed in claim 1.

Moreover, the reason why this combination would be obvious, according to the office action, was that it would provide a display system conveniently adapted to use in a wide variety of pulse modulation schemes. But there is nothing about either reference which suggests that they should be combined to do this. In other words, even if the Examiner were correct that there were some benefit to combine the two, there is nothing in either reference that suggests any reason to combine them. The fact that Worley teaches that high quality images may be good does not teach any reason why Worley's embodiment is not just fine without anything from Walker.

Thus, the rejection of claim 1 should be reversed. On the same basis, the rejections of claim 11 and its dependent claims and claim 21 and its dependent claims should be reversed.

* * *

Applicants respectfully request that each of the final rejections be reversed and that the claims subject to this Appeal be allowed to issue.

Respectfully submitted,

Date: 7/13/05

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CLAIMS APPENDIX

The claims on appeal are:

1. A method, comprising:

providing digital information including global digital information indicative of a common reference and local digital information indicative of an optical output from at least one display element; and

determining a transition separating a first pulse interval and a second pulse interval in a modulated signal based on the digital information.

2. The method of claim 1, including driving said at least one display element from the modulated signal to provide the optical output based on said digital information.

3. The method of claim 2, including:

storing said digital information at said at least one display element;

deriving the timing of said transition to indicate the lengths of said first and second pulse intervals forming the modulated signal based on said digital information; and

controlling the optical output of the at least one display element based on said lengths of said first and second pulse intervals of the modulated signal within a refresh period.

4. The method of claim 3, wherein providing said local digital information including:

dynamically receiving video data associated with the at least one display element ; and

causing a duration of illumination within said refresh period for the at least one display element based on the length of the first pulse interval of the modulated signal.

5. The method of claim 4, wherein receiving said video data includes programmablly receiving at least one pixel value corresponding to the at least one display element.

6. The method of claim 3, including:

programmbally storing said digital information in at least one register associated with the at least one display element;

varying a duration of application of the modulated signal to the at least one display element based on said digital information;

selectively adjusting the optical output based on said duration of application of the modulated signal to compensate for a display nonlinearity for the at least one display element; and

selectively delaying said transition based on said digital information to nonlinearly modulate the optical output from the at least one display element.

7. The method of claim 3, including:

receiving said global and local digital information;

using said global and local digital information to determine the lengths of said first and second pulse intervals; and

causing said transition in the modulated signal to the at least one display element based on the lengths of said first and second pulse intervals.

8. The method of claim 3, wherein providing digital information includes sending at least one pixel value to said at least one display element and said method further including:

receiving said at least one pixel value to store in at least one register at said at least one display element;

sending a start signal to said at least one display element;

in response to the start signal at said at least one display element, initiating the modulated signal to drive said at least one display element;

incrementing a count and reporting the count to said at least one display element;

in response to said count at said at least one register of said at least one display element, comparing said at least one pixel value to said count to determine the timing of the transition; and

causing said transition in the modulated signal for the at least one display element based on the timing of said transition.

9. The method of claim 1, including causing said transition from an "ON" logic state to an "OFF" logic state in the modulated signal when said global and local digital information meet a first predefined criterion.

10. The method of claim 9, including causing said transition from an "OFF" logic state to an "ON" logic state in the modulated signal when said global and local digital information meet a second predefined criterion being substantially opposite that the first predefined criterion.

11. An apparatus, comprising:

at least one display element;

a controller to provide digital information including global digital information indicative of a common reference and local digital information indicative of an optical output from the at least one display element; and

a signal generator associated with the at least one display element operably coupled to said controller to receive the digital information and to determine a transition separating a first pulse interval and a second pulse interval in a modulated signal based on the digital information.

12. The apparatus of claim 11, wherein said signal generator to drive the at least one display element from the modulated signal to provide the optical output based on a comparison of the global and local digital information.

13. The apparatus of claim 12, further comprising:

a pixel source operably coupled to the signal generator to receive said digital information, said signal generator to:

derive the timing of said transition to indicate the lengths of said first and second pulse intervals forming the modulated signal based on said digital information; and

control the optical output for the at least one display element based on said lengths of said first and second pulse intervals of the modulated signal within a refresh period.

14. The apparatus of claim 13, wherein said pixel source dynamically receives video data associated with the at least one display element to cause a duration of illumination within said refresh period for the at least one display element based on the length of the first pulse interval of the modulated signal.

15. The apparatus of claim 13, wherein said at least one display element includes a plurality of display elements forming an array of display elements in a liquid crystal display.

16. The apparatus of claim 15, wherein said liquid crystal display includes a spatial light modulator.

17. The apparatus of claim 13, wherein said controller includes:

a control logic to controllably operate the at least one display element based on said digital information; and

a counter to provide global digital information indicative of a dynamically changing common reference for said at least one display element.

18. The apparatus of claim 17, wherein said signal generator includes a device to use said global digital information with said local digital information to provide said transition in the modulated signal driving the at least one display element.

19. The apparatus of claim 18, wherein said each signal generator includes an associated pulse width modulator to form said modulated signal based on said transition, said associated pulse width modulator to:

programmbally receive said digital information including video data including a pixel value;

store said pixel value;

selectively delay the transition based on said pixel value; and

cause the transition in said modulated signal from a first logic state to a second logic state to nonlinearly modulate the optical output from the at least one display element.

20. The apparatus of claim 19, wherein said pixel source includes at least one register to store said pixel value.

21. A processor-based system, comprising:

a pixel array including a first and second pixel;

at least two first circuits, each associated with a different pixel of said pixel array; and

a second circuit to supply digital information including global digital information indicative of a common reference and local digital information indicative of a pixel output to each first circuit to determine a transition separating a first pulse interval and a second pulse interval in a modulated signal based on the digital information.

22. The processor-based system of claim 21, wherein said each first circuit of the at least two first circuits comprising:

a waveform forming device to generate the modulated signal through pulse-width modulation that drives said different pixel of the pixel array causing the pixel output based on a comparison of the global and local digital information.

23. The processor-based system of claim 22, wherein said each first circuit of the at least two first circuits further comprising:

a digital pixel source operably coupled to the waveform forming device to receive said digital information, said each first circuit to:

derive the timing of the transition to indicate the lengths of said first and second pulse intervals based on said digital information; and

control the pixel output from a pixel of the pixel array based on the modulated signal within a refresh period.

24. The processor-based system of claim 23, wherein said each digital pixel source to dynamically receive corresponding video data associated with a pixel to cause a duration of illumination for said pixel based on the length of the first pulse interval of the modulated signal within said refresh period.

25. The processor-based system of claim 23, wherein said pixel array includes a liquid crystal display.

26. The processor-based system of claim 25, wherein said liquid crystal display includes a spatial light modulator.

27. The processor-based system of claim 23, wherein said second circuit includes:

a control logic to controllably operate each pixel of said pixel array based on said digital information; and

a counter to provide a count in said common reference of said global digital information.

28. The processor-based system of claim 27, wherein said each first circuit of the at least two first circuits includes a device to use said local digital information with the global digital information to provide the transition in the modulated signal for an associated pixel of said pixel array.

29. The processor-based system of claim 28, wherein said each first circuit of the at least two first circuits to:

programmbally receive said video data including at least one pixel value associated with the associated pixel of said pixel array;

store said each pixel value;

selectively delay the transition based on said each pixel value; and

cause the transition in said modulated signal from a first logic state to a second logic state to nonlinearly modulate the pixel output of the associated pixel of said pixel array.

30. The processor-based system of claim 23, wherein said each digital pixel source includes at least one register to store said digital information associated with a pixel of said pixel array.